

# **EXHIBIT A**

1  
2 Honorable Ricardo S. Martinez  
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8 UNITED STATES DISTRICT COURT  
9 WESTERN DISTRICT OF WASHINGTON  
10 AT SEATTLE

11 PETER and RENEE NORRIS, individually  
12 and on behalf of the marital community

13 Plaintiffs,

14 vs.

15 STATE FARM FIRE AND CASUALTY  
16 COMPANY, an admitted insurer

17 Defendant.

18 No. 2:14-cv-01453 RSM

19 DEFENDANT STATE FARM FIRE AND  
20 CASUALTY COMPANY'S EXPERT  
21 DISCLOSURE

22 As required by Fed. R. Civ. P. 26(a)(2) and this Court's Order, Defendant State Farm Fire  
23 and Casualty Company ("State Farm") hereby discloses the following expert witnesses from  
24 which State Farm may present testimony at trial under Federal Rule of Evidence 702, 703 or 705.

25 1. Scott Thomas, P.E.

26 Principal, Civil Engineer

27 Case Forensics

c/o: State Farm's attorneys of record

Mr. Thomas will be called to testify on the subject matters set forth in his reports  
attached hereto as Exhibit 1 both as a witness in State Farm's case in chief and as a  
rebuttal expert to the opinions and testimony offered by Plaintiffs.

28 2. Warren Harris, B.S., PI

29 Senior Forensic Chemist

30 Case Forensics

31 c/o: State Farm's attorneys of record

Mr. Harris will be called to testify on the subject matters set forth in his reports attached hereto as Exhibit 2 both as a witness in State Farm's case in chief and as a rebuttal expert to the opinions and testimony offered by Plaintiffs.

### 3. Timothy H. Roberts, P.E., R.G.

### **Member/Geotechnical Engineer**

## South Sound Geotechnical Consulting

c/o: State Farm's attorneys of record

Mr. Roberts will be called to testify on the subject matters set forth in his reports attached hereto as Exhibit 3 both as a witness in State Farm's case in chief and as a rebuttal expert to the opinions and testimony offered by Plaintiffs.

State Farm may also call each of the foregoing witnesses as rebuttal witnesses and reserves the right to disclose additional rebuttal witnesses pursuant to Fed. R. Civ. P. 26(a)(2)(D).

State Farm expressly reserves the right not to call every witness listed. As to any witness retained or specially employed to provide expert testimony in this case that State Farm elects not to call as a witness at trial, such expert is expressly declared to be a consulting witness whether hereafter deposed or not. No other party may call such consulting expert without State Farm's express permission pursuant to Fed. R. Civ. P. 26(b)(4)(D).

Discovery in this case is not complete. State Farm will supplement its disclosures to the extent necessary and as needed to meet and rebut testimony and evidence presented by Plaintiffs.

DATED this 21st day of September, 2015.

## **LEWIS BRISBOIS BISGAARD & SMITH LLP**

By: s/Donna M. Chamberlin

V. Andrew Cass, WSBA # 31365

Donna M. Chamberlin, WSBA # 31227

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2 Attorneys for Defendant State Fire and Casualty  
3 Company  
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**CERTIFICATE OF SERVICE**

I hereby certify that on September 21, 2015, I electronically filed the foregoing with the Clerk of the Court using the CM/ECF system, which will send notification of such filing to all attorneys of record and provide service via electronic mail to:

Linda L. Foreman  
Bowers Foreman, PLLC  
5825 60<sup>th</sup> Street SE  
Snohomish, WA 98290  
Phone: 425-377-1100  
Email: [linda@lindaforeman.com](mailto:linda@lindaforeman.com)

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Linda Morlin, Legal Secretary



September 21, 2015

Ms. Donna Chamberlin  
Lewis Brisbois Bisgaard & Smith LLP  
2101 Fourth Avenue, Suite 700  
Seattle, WA 98121

**NORRIS WATER LOSS**

Loss Address: 25408 Riata Street  
Plain, Washington 98826  
DOL: December 4, 2013  
CASE File Number: 2000415

Dear Ms. Chamberlin:

CASE Forensics was requested to investigate the Norris Water Loss. Pursuant to your request, CASE Forensics has prepared the report that is enclosed. If you have any questions concerning this report, please do not hesitate to give me a call at (425) 775-5550.

Respectfully Submitted:

A handwritten signature in black ink, appearing to read "Scott J. Thomas".

Scott J. Thomas, PE  
Principal, Civil Engineer  
CASE Forensics



**Seattle Office:** 23109 55th Ave West, Mountlake Terrace, WA 98043 T: 425.775.5550 F: 425.775.0900  
Anchorage • Denver • Honolulu • Portland • Salt Lake City • San Francisco • Seattle • Spokane

PETER AND RENEE NORRIS  
V.  
STATE FARM FIRE AND CASUALTY COMPANY  
  
US DISTRICT COURT FOR THE  
WESTERN DISTRICT OF WASHINGTON  
AT SEATTLE

2:14-cv-01453-RSM

September 21, 2015

CASE File No. 2000415  
Date of Loss: December 4, 2013

*Report Prepared By:*



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Scott J. Thomas, PE  
Principal, Civil Engineer

*Technical Review By:*



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John D. Rickauer, PE  
Senior Forensic Engineer

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## **1.0 Synopsis**

The Norris single family residence is located at 25408 Riata Street on a hillside in an unincorporated area of Chelan County, Washington. On December 4, 2013, mass soil movement occurred at the east and south sides of the structure in conjunction with the sound of running water. The mass soil movement resulted in undermining of the soils that were formerly supporting the foundation of the house. A failure of the domestic water supply line was reported at the same approximate time frame. The Norrises subsequently contracted to have repairs made to the system supporting the foundation of the house.

Through examination of the evidence and analysis, CASE Forensics Corporation (CASE) found that the failure of a buried subsurface water supply line outside of the building, but within the property lines, was the source of an uncontrolled water release and saturation of soils that caused the mass soil movement. CASE also performed an allocation of damage repair tasks based upon State Farm Homeowners Policy definitions and discovery documents pertaining to repair scopes and associated costs.

## **2.0 Scope of Work**

CASE was initially requested by State Farm Insurance Company (State Farm) to perform the following:

- 2.1 Determine the cause of the reported domestic water supply line failure.
- 2.2 Determine the cause of the mass movement of soils adjacent to and beneath the foundation of the structure.

CASE was subsequently and additionally requested by Counsel for State Farm to perform the following:

- 2.3 Allocate the Plaintiff's submitted claimed costs between 1) dwelling repairs and 2) non-dwelling repairs, based upon the Homeowners Policy's definition of "*dwelling*."

Pursuant to the above requests, CASE Forensics has completed the following tasks:

- 2.4 Examination of the site and single-family residence.
- 2.5 Interview with Mr. Randy Black of State Farm.
- 2.6 Interview with Mr. Peter Norris, owner/insured.

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- 2.7 Review of photographs and engineered design drawings of the house provided by the insured.
- 2.8 Interview with Mr. Mike Livers, the builder of the house.
- 2.9 Interview with Mr. Brooks Gilbertson, Gilbertson Construction (425-210-3322), drainage, excavation contractor.
- 2.10 Telephone interview with Mr. Ken Severance, Maintenance Manager, for the Ponderosa Community Club (PCC).
- 2.11 Telephone consultation with Mr. Timothy Roberts, P.E., R.G., of South Sound Geotechnical Consulting (SSGC).
- 2.12 Consultation with Mr. Warren Harris, P.I., Senior Forensic Chemist with CASE.
- 2.13 Research of Chelan County, Washington Assessor records.
- 2.14 Telephone discussion with Mr. Casey Headlee, Plans Examiner / Inspector with the Chelan County Dept. of Community Development, Building and Fire Division.
- 2.15 Internet research of soil maps and soil information published by the Natural Resources Conservation Service [www.websoilsurvey.nrcc.usda.gov/](http://www.websoilsurvey.nrcc.usda.gov/).
- 2.16 Research of historical regional weather data.
- 2.17 Research of the 2003 versions of the International Residential Code (IRC) and the 2003 International Plumbing Code (IPC), including amendments adopted by Washington State and Chelan County.
- 2.18 Review of information posted on the Ponderosa Community Club web site. (<http://www.ponderosacommunityclub.org/>)
- 2.19 Document and/or photograph pertinent observations.
- 2.20 Laboratory examination of samples of the domestic water supply line.
- 2.21 Minor soil probing was accomplished to establish and observe relative soil densities.
- 2.22 CASE reviewed the materials generated as a result of State Farm's request for production. The documents provided are detailed on the CD Contents document provided for State Farm Claim Number: 46-26X8-510.
- 2.23 Review of State Farm Homeowner's Policy language regarding the definition of the term "dwelling" and associated policy language.

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### **3.0 Background**

In response to the December 4, 2013 request of Mr. Randy Black of State Farm, CASE conducted an examination/investigation of a single-family residence/vacation home located at 25408 Riata Street, Plain, Washington.<sup>1</sup> The residence is owned by Peter and Renee Norris and occupied on a part time basis. Mr. Norris reported the failure of a domestic water supply pipe, associated uncontrolled water release, and displacement of soils from beneath and adjacent to the foundation of the residence. The house was not occupied at the time of the reported failures.

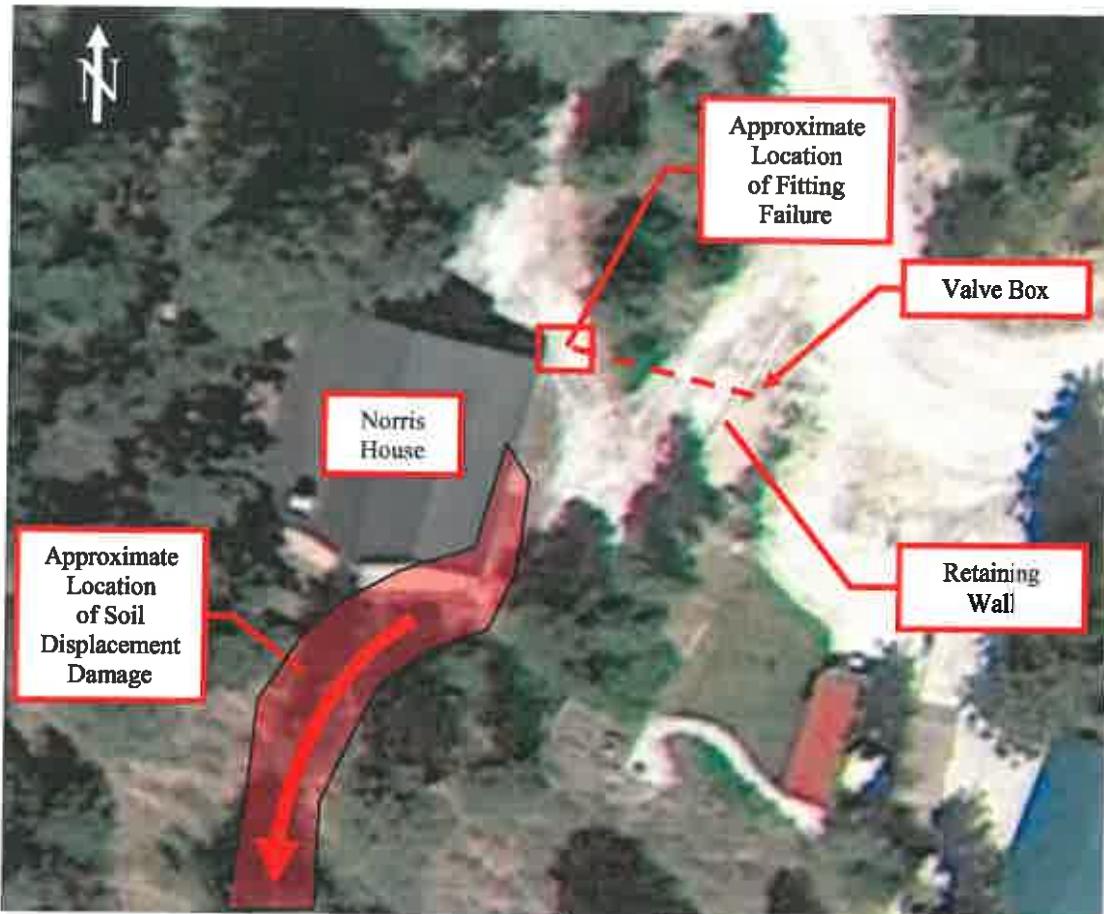
A site investigation was performed by CASE on December 7, 2013. Site conditions were clear and approximately 18°F. There was up to 12 inches of accumulated snow on the ground, the surface of which was frozen. Hand excavation and/or probing of the soils adjacent to the house was not possible due to the frozen grade conditions. A large quantity of the foundation backfilled soils along the south two-thirds of the east side of the house and east half of the south side of the house had been displaced downslope to the south, toward the Wenatchee River. Figure 1 below is an aerial image of the property with elements of interest identified. The dashed red line indicates the approximate position of the 1 inch diameter PVC domestic water supply line. The red rectangle indicates the location of the buried and failed fitting in the domestic water supply line. (Figure 1)

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<sup>1</sup> The investigation was limited to visual observations of accessible elements of the structure(s) and/or property. Unless otherwise noted, no invasive or destructive actions were taken to penetrate concealed or finished areas to observe or document any damage or conditions not readily visible.

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**Figure 1 – Aerial Image (Source: Google Earth)**

The soils beneath the footings of the elevated exterior deck at the east and south sides of the house had been displaced, resulting in the downward displacement of the decks. A portion of slab on grade concrete patio at the south side of the house was also displaced downslope. (Photographs 1 - 3)

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**Photograph 1 - Erosion damage at the southeast corner of the house, looking south**



**Photograph 2 – Erosion damage at the east side of the house, looking south**

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**Photograph 3 – Erosion damage at the south side of the house**

The southeast corner of the foundation of the house was undermined approximately 10-12 feet horizontally northward and eastward from the southeast corner of the house. No evidence of foundation wall cracking or deflection of the perimeter footings or the concrete slab on grade floor of the house were observed. The southeast corner of the roof appeared to be sagging where a support post had been displaced.

During the December 7, 2013 site visit, the location of the suspected failure of the water supply line could not be located due to the presence of snow, ice, and frozen soils at grade. On or about December 29, 2013, the location of the pipe failure was discovered and excavated by a contractor working for the Norrises when ambient temperatures warmed. CASE was subsequently notified that the location of the failed water pipe had been excavated and was accessible and available for examination.

CASE performed a second site examination on December 30, 2013. An excavated pit measuring approximately 4 by 4 by 4 feet deep was observed at the northeast corner of the house. The excavated pit was protected by 2x lumber and fiberglass insulation. Photograph 4 indicates the location of the pit relative to the northeast corner of the house. The red dashed line indicates the approximate orientation of the domestic water supply line from the valve box to the house.

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**Photograph 4 – Location of pipe fitting failure at the northeast corner of the house**

Within the excavated pit, the 1 inch PVC water supply line was observed oriented in a generally east-west direction. The PVC pipe was located approximately 3 inches beneath an approximately 3 inch diameter plastic electrical conduit (Photographs 5, 6)



**Photograph 5**

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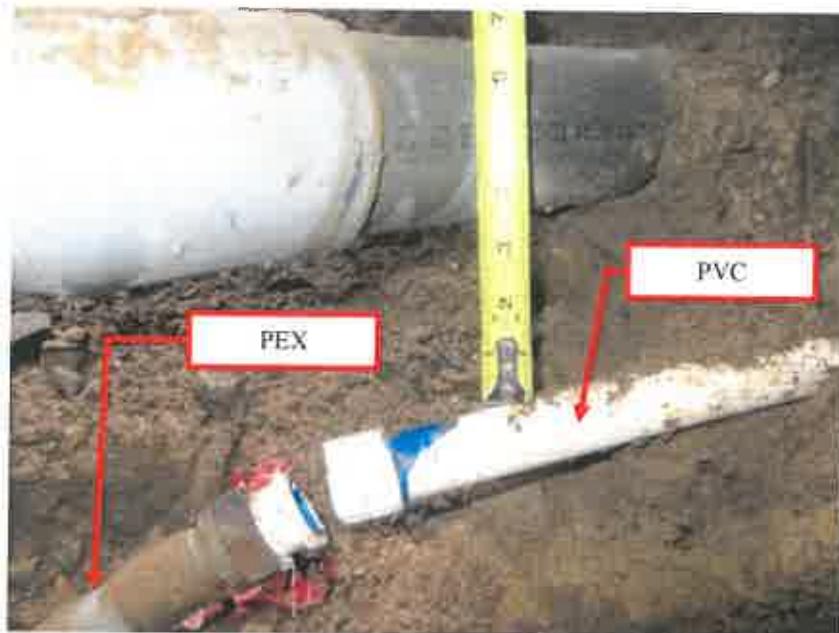


**Photograph 6**

A failed PVC fitting was observed at a joint between the PVC water supply pipe and the PEX tubing that continues eastward toward the house. (Photograph 7) The bury depth of the pipe at the location of the failed fitting was measured to be 40 inches below grade.

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**Photograph 7 – Failed fitting of water supply pipe, looking north**

Observation revealed the domestic water supply pipe was not oriented in a straight line. An upward bend in the pipe was observed at the joint between the PVC and PEX tubing. Hand manipulation of the pipe segments indicated a tendency for the pipe ends to “spring” upward when released. (Photographs 8, 9)

**CASE Comment:** The orientation of pipe assemblies in a non-linear fashion can result in effectively pre-loading the pipe, resulting in bending stresses within the walls of the pipe and fittings.

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**Photograph 8**



**Photograph 9**

The PVC pipe and PEX tubing were both marked to indicate the upward facing surfaces and were subsequently cut to remove the two component halves of the failed PVC fitting. The samples were labeled and were taken into custody as evidence for additional laboratory examination by Warren Harris, Senior Forensic Chemist with CASE. (Photograph 10)

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**Photograph 10**

**Consultation with Mr. Timothy Roberts, PE, RG, of South Sound Geotechnical Consulting**  
CASE recommended to State Farm that Mr. Timothy Roberts of South Sound Geotechnical Consulting (SSGC) be engaged to perform a site visit and provide a geotechnical engineering opinion on the cause of the mass soil movement. Mr. Roberts visited the site on approximately December 16, 2013 and subsequently reported that the soils adjacent to the Norris house are competent and relatively stable. No evidence of tension cracks or a history of slope movement was reported by Mr. Roberts. Mr. Roberts opined that it is unlikely that mass earth movement (landslide) caused the domestic water supply pipe failure.

**Consultation with Mr. Warren Harris, P.I., Senior Forensic Chemist with CASE**

The sampled components of the failed water supply line were provided to Mr. Warren Harris. On January 7, 2014, Mr. Harris performed a nondestructive examination of the fractured water pipe. Mr. Harris subsequently reported no evidence of tool marks or improper cementing of the threaded PVC union. Mr. Harris also reported that the exposed fracture surface that was not scoured exhibits evidence of both a rapid brittle fracture and a slow tearing ductile fracture. The forces associated with the formation of the initial hairline fracture in the PVC threaded union were created at the time the PVC was joined with the PEX. It is also more likely than not that the fracture was initiated at the time of installation.

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In a letter dated May 20, 2015, CASE was requested by Ms. Donna Chamberlin, Counsel for State Farm, to review invoices and documentation regarding repairs made to the house by the Norrises and agents thereof. CASE was provided a disc containing Plaintiff's Responses to Defendant's First Set of Interrogatories and Requests for Production with all supporting documents. CASE was also provided with an excerpt of the Plaintiffs' homeowners policy language that provides a definition of the term dwelling (Figure 2). Ms. Chamberlin requested that CASE allocate the Plaintiff's submitted claimed costs between dwelling repairs and non-dwelling repairs, based upon the language in the Homeowners Policy's definition of "dwelling." CASE reviewed the submitted materials.

**COVERAGE A – DWELLING**

1. **Dwelling.** We cover the dwelling used principally as a private residence on the residence premises shown in the Declarations.  
**Dwelling includes:**
  - a. structures attached to the dwelling;
  - b. materials and supplies located on or adjacent to the residence premises for use in the construction, alteration or repair of the dwelling or other structures on the residence premises;
  - c. foundation, floor slab and footings supporting the dwelling, and
  - d. wall-to-wall carpeting attached to the dwelling.
2. **Dwelling Extension.** We cover other structures on the residence premises, separated from the dwelling by clear space. Structures connected to the dwelling by only a fence, utility line, or similar connection are considered to be other structures.  
**We do not cover other structures:**
  - a. not permanently attached to or otherwise forming a part of the realty;
  - b. used in whole or in part for business purposes unless such use consists solely of use of office space for paperwork, computer work or use of a telephone, and consists solely of facilities that are:
    - (1) duties of the insured's employment by another; and
    - (2) performed solely by the insured; or
  - c. rented or held for rental to a person not a tenant of the dwelling, unless used solely as a private garage.
3. **Property Not Covered.** We do not cover:
  - a. land, including the land necessary to support any Coverage A property;
  - b. any costs required to replace, rebuild, stabilize, or otherwise restore the land;
  - c. the costs of repair techniques designed to compensate for or prevent land instability to any property, whether or not insured under Coverage A; or
  - d. lawns or artificial grass, except as provide in SECTION I – ADDITIONAL COVERAGES.

Figure 2 – State Farm Homeowners Policy Language (Source: Lewis Brisbois Bisgaard & Smith LLP)

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In order to allocate repair tasks, it was necessary to apply the provided policy language to the repairs to damages at the Norris property. Based on Section 1 - Dwelling, the following repair tasks **would** be considered dwelling-related repairs:

1. Repairs of the attached east deck and deck footings.
2. Repairs of the attached elevated south deck and deck footings.
3. Bracing and repair of the overhanging southeast corner of the roof structure.

Based on Section 3 - Property Not Covered, that the following repair tasks **would not** be considered dwelling-related repairs:

1. The restoration of the displaced soils on which the foundation of the structure had been bearing.
2. The installation of alternate foundation support systems to replace the displaced soils on which the foundation of the structure had been bearing (e.g. pin pile installation, shotcrete wall installation, structural foam installation)

CASE reviewed the materials generated as a result of State Farm's request for production. The documents provided are detailed on the CD Contents document provided for State Farm Claim Number: 46-26X8-510. The repair tasks identified within the submitted invoices and other documents were generally designated by CASE as dwelling or non-dwelling repair tasks based upon our interpretation of the provided definition of *dwelling* and language specific to the Norris' homeowner's policy. In instances where repair tasks were attributable to both dwelling and non-dwelling repairs, an attempt was made to estimate the allocation of dwelling vs. non-dwelling repairs. In instances where claimed repair tasks could not be allocated with reasonable precision due to the absence of specific information about the repair task, a note was made that additional information would be required to determine whether the claimed repair tasks are dwelling or non-dwelling related repairs. Allocations are presented in Microsoft Excel spreadsheet format, with costs associated with the repair tasks included for convenience. (Reference Table I appended to the CASE report dated June 24, 2015)

#### **Determination of Dwelling vs. Non-Dwelling Repair Tasks**

During the review of invoices and other documents submitted to CASE as part of the damage repair allocation process, CASE encountered several invoices and other supporting documents which contained insufficient detail to allow reasonable determination of whether the claimed repair tasks were attributable to dwelling or non-dwelling repairs. These documents were footnoted accordingly. In order that these repair tasks be appropriately and accurately allocated, it will be necessary to review additional information regarding the details of the submitted repair tasks. It would be helpful to have additional information regarding the progress of repairs to the structure and attached substructures, specifically, the south elevated wood deck and the east wood deck

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structures. It would also be helpful to know which costs are associated with the repairs of these structures including the isolated concrete footings that supported these substructures.

#### **4.0 Opinions and Bases**

The opinions offered in this report are based on a more probable than not basis with a reasonable degree of engineering and scientific probability, and are based on an ongoing investigation being conducted by CASE Forensics. We reserve the right to amend this report or provide a supplemental report as new information becomes available.

- 4.1 The cause of the mass movement of soils at the Norris site on December 4, 2013 was the uncontrolled release of thousands of gallons of water from the failed fitting in the domestic water supply line located near the northeast corner of the house. The discharged water likely infiltrated, saturated, and increased the density of the surrounding soils until mass soil movement was initiated. Erosion of soils resulting from running water likely occurred in concert with the uncontrolled water release until the flow of water was stopped by shutting the control valve.**

**Basis:** Observation revealed erosion and soil displacement patterns consistent with a water source near the northeast corner of the single family residence. Rills were observed at the soils at the north end of the east wood porch. Excavation of a pit near the northeast corner of the residence revealed a failed fitting in the domestic water supply line. Anecdotal information provided by Mr. Ken Severance indicates that the sound of running water observed on the date of loss stopped when the water valve controlling flow to the house was closed. The PVC fitting failure occurred at a location absent of evidence of mass soil movement.

- 4.2 The cause of the failure of and water release from the water supply line at the Norris site on December 4, 2013 was the fracture of a PVC fitting between the upstream PVC pipe from the valve box and the PEX tubing that provided service to the house.**

**Basis:** Observation revealed a fractured PVC fitting used to join the upstream PVC pipe with the downstream PEX tubing. The water line was observed to be discontinuous at the location of the fitting failure. The fractured components of the fitting were examined by Mr. Warren Harris, who provided an opinion regarding the cause of the fracture of the fitting.

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**4.3 The failed fitting in the water supply line was located at an appropriate bury depth.**

**Basis:** Mr. Casey Headlee, Plans Examiner / Inspector with the Chelan County Dept. of Community Development, Building and Fire Division reported that the bury depth of the water lines between the outside of the building footprint and the valve box at the property line is not regulated by the county. Mr. Headlee advised that the frost depth for foundations in Chelan County is 24 inches. Research of the 2003 IPC, section 609.1 revealed that, "All water service yard piping shall be at least twelve (12) inches (305 mm) below the average local frost depth." As this portion of the IPC has not been adopted by Chelan County, this standard is being used as a technical guideline vs. a strict requirement. CASE measured the bury depth of the pipe at the failure location to be 40 inches below grade, which is greater than the local 24 inch required frost depth plus the plumbing guideline of an additional 12 inches.

**Basis:** Mr. Brooks Gilbertson, a licensed excavation and drainage contractor, was interviewed and advised that the minimum bury depth for domestic water supply laterals at the site is 36 inches. Mr. Gilbertson also confirmed that the bury depth of the water supply line was in excess of 36 inches.

**4.4 The total cost of claimed and documented repair scope tasks attributable to dwelling related repairs is \$2,465.04.**

**Basis:** Review of materials generated as a result of State Farm's request for production, direct observation revealing damage to decks and deck footings and the absence of damage to footings and concrete floor slabs within the footprint of the house, review of CASE photographs of the damaged structure, and review of State Farm Homeowner's Policy language concerning the term dwelling.

**4.5 The total cost of claimed and documented repair scope tasks attributable to non-dwelling related repairs is \$215,040.55.**

**Basis:** Review of materials generated as a result of State Farm's request for production, direct observation revealing damage to decks and deck footings and the absence of damage to footings and concrete floor slabs within the footprint of the house, and review

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of State Farm Homeowner's Policy language concerning the term dwelling and its associated exclusions relating to land including land necessary to support dwelling.

**4.6     The total cost of claimed and documented repair scope tasks attributable to repairs which may or may not be related to the dwelling is \$43,607.31. Additional information will be required to determine whether these claimed and documented costs are dwelling or non-dwelling related repairs. It is our expectation that the above listed cost totals will change as additional information is provided regarding the details of the claimed and documented costs.**

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## **5.0 Curriculum Vitae**

**Scott J. Thomas, PE**  
**Principal, Civil Engineer**

### **SUMMARY**

Mr. Thomas is a company Principal and Licensed Civil Engineer in California, Hawaii, Oregon and Washington, with experience involving structural and building envelope failure, causation analysis, damage assessment, technical support, construction management and construction cost analysis. In addition to forensic investigations, he specializes in providing repair design and cost analysis for building repair estimates.

Mr. Thomas provides engineering support for roof, foundation and retaining wall problems. He conducts on site investigations of exterior building envelopes and roof membranes for water intrusion and resulting damage. He is experienced with water intrusion and mold damage involving EIFS, Stucco, vinyl and wood siding, as well as, windows, doors and roof material. In addition, he performs post-inspection and damage assessment of commercial and residential buildings damaged by fire and seismic activity, and conducts code investigations. He provides engineering support to the insurance and legal industries for construction defect litigation.

### **EDUCATION**

**Bachelor of Science in Structural Engineering, University of California, San Diego, 1988**

### **LICENSES, CERTIFICATIONS AND REGISTRATIONS**

**Registered Professional Civil Engineer, state of California, No. C 57679**

**Registered Professional Civil Engineer, state of Hawaii, No. 12718**

**Registered Professional Civil Engineer, state of Idaho, No. 14401**

**Registered Professional Civil Engineer, state of Montana, No. 19967**

**Registered Professional Civil Engineer, state of Oregon, No. 78365PE**

**Registered Professional Civil Engineer, state of Washington, No. 35472**

**Active Inspector / Moisture Analysis, EIFS 3<sup>rd</sup> Party Inspector Certification, Exterior Design Institute**

**Haag Certified Roofing Inspector for Residential & Commercial Roofs, Haag Engineering**

**WABO & ICBO Special Inspector for Reinforced Concrete – Inactive Certification**

**WABO & ICBO Special Inspector for Spray Applied Fire-Resistive Materials – Inactive Certification**

**Relocatable Building Field Inspector, CA Division of the State Architect – Inactive Certification**

**ACI Field Technician, Grade I – Inactive Certification**

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**PROFESSIONAL EXPERIENCE**

**CASE Forensics Corporation, 2006 to Present**

*Senior Civil Engineer*

Performs structural evaluation of residential, commercial/retail and industrial building construction. Conducts forensic field investigations, construction site inspections, structural failure analysis, water intrusion inspections, seismic damage investigations and remediation consultation for insurance companies, law firms and industry.

**Berschauer Phillips Construction Company, 2003 to 2005**

*Quality Control Program Administrator / Project Engineer*

Oversaw all quality assurance/quality control activities for General Contractor on \$17.3M Port of Seattle Terminal 46 Yard and Building Improvements project. Developed and implemented Contractor Quality Control (CQC) program. Coordinated activities of various inspection agencies including representatives of the CQC lab, special inspection agency, city, county, fire department, commissioning agent, and POS inspectors. Issued and maintained logs of project correspondence, submittals, contract issues, change order requests, and as-built drawings. Project Details: site and building demolition, excavation, new buildings, renovation to existing structures, new inbound and outbound truck inspection and scale structures, installation and renovation of reefer container power distribution and plugs, power distribution and light towers, new parking lots, chain link fencing and gates, paving, curbs and striping, miscellaneous water distribution and sanitary sewer work, and related work.

**Professional Service Industries, Inc., 1998 to 2003**

*Project Engineer / Quality Manager*

Supervised construction material laboratory testing and field inspection operations. Implemented and maintained participation in the A2LA accredited QA program including continuing Field Inspector training, calibration and maintenance of equipment and participation in laboratory proficiency sample programs. Performed site investigations to determine potential sources of distress or failure to structural and architectural elements. Sampled materials and performed/recommended laboratory procedures. Assisted clients in developing test protocols to meet their needs where no recognized standards exist. Responsible for preparing invoices for services and reviewing receipts in excess of \$1.2 million annually.

**Inspection Services, Inc., 1994 to 1995 and 1996 to 1998**

*Supervising Civil Engineer / Laboratory Manager*

Supervised all laboratory testing operations. Managed construction inspection and structural investigation projects. Implemented and directed QA program operations including Field Inspector training, calibration and maintenance of equipment. Participated in laboratory accreditation programs. Performed investigative site inspections and developed project specific field testing programs. Facilitated permitting process by coordinating with engineers, architects, and contractors to fulfill code required testing and inspection procedures.

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**Kenmar Construction, Inc., 1995 to 1996**  
*Project Manager*

Managed several concurrent construction projects for the Department of the Army. Responsibilities included preparation of estimates, bid documents, progress schedules, subcontracts, submittals and all project-related correspondence. Interfaced with Government Inspectors and Contracting Officers, and oversaw subcontractors and vendors.

**Applied Materials & Engineering, Inc., 1992 to 1994**  
*Staff Engineer/Inspector*

Monitored construction project procedures and materials for conformance with plans and specifications. Prepared and reviewed structural repair scheme specifications and drawings. Evaluated and documented distress to structures and assisted Project Engineers in forensic analyses. Sampled, prepared, and tested a variety of construction materials.

**United States Peace Corps/Nepal, 1989 to 1991**  
*Assistant Engineer*

Performed materials & cost estimates for municipal storm water drainage systems and bus station designs. Edited the *National Urban Roads Standardization Manual*.

**University of California, Charles Lee Powell Structural Systems Laboratory, 1988 to 1989**  
*Engineering Aide*

Assisted in faculty research on retrofitting of reinforced concrete bridge columns for California Department of Transportation. Constructed and tested model columns including design and installation of instrumentation for test data acquisition.

**CONTINUING EDUCATION**

- *HVAC Fundamentals I & II*, CASE Forensics, 2008
- *Trial Preparation and Expert Witness Testimony*, CASE Forensics, 2007
- *Architectural Sheet Metal Manual Workshop*, SMACNA & SMWIA, 2006

**SOCIETIES AND MEMBERSHIPS**

American Concrete Institute, Associate Member (ACI)  
American Society of Civil Engineers, Associate Member (ASCE)  
Exterior Design Institute (EDI)

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## **6.0 Testimony Record**

<b>Deposition</b>	<b>Mediation</b>	<b>Arbitration</b>	<b>Trial</b>	<b>Court</b>	<b>Case</b>
	3/17/2014				Vedder v. Dufour
11/15/2010				Superior Court of Washington for King County	Saesere & Saechao v. Liberty Mutual Fire, et al.

## **7.0 Cost of Investigation**

CASE Forensics charges \$185.00 per hour for investigations and \$280.00 per hour for testimony provided by Mr. Scott Thomas, PE. To date, CASE Forensics has invoiced approximately \$14,171.25 for Mr. Thomas' time on this case.

## **8.0 Trial Exhibits**

- 8.1 Physical evidence collected from the scene
- 8.2 Exemplar evidence
- 8.3 Discovery documents and drawings
- 8.4 Work product and analysis produced by CASE Forensics
- 8.5 Reports and figures prepared by Scott J. Thomas
- 8.6 Reports, memos, and figures prepared by Warren Harris
- 8.7 Timeline and other sequence of events illustrations



January 24, 2014

Mr. Randy Black  
State Farm Insurance Company  
PO Box 52276  
Phoenix, AZ 85072

#### NORRIS PIPE AND SOIL DAMAGE INVESTIGATION

Insured: Peter and Renee Norris  
Loss Address: 25408 Riata Street  
Plain, Washington 98826  
DOL: December 4, 2013  
Claim Number: 47-26X8-510  
CASE File Number: 2000415

#### STATEMENT/BACKGROUND INFORMATION

In response to the December 4, 2013 request of Mr. Randy Black of State Farm Insurance Company, CASE Forensics Corporation (CASE) conducted an examination/investigation of a single-family residence/vacation home located at 25408 Riata Street, Plain, Washington.<sup>1</sup> The residence is owned by Peter and Renee Norris, who reported the following damage:

1. The failure of a domestic water supply pipe fitting and associated uncontrolled water release, and
2. Displacement of soils from beneath the foundation of the residence and the exterior elevated deck footings.

#### PURPOSE AND SCOPE

The purpose of this investigation was to determine the cause of the reported domestic water supply line failure and soil movement damage to soils adjacent to and beneath the foundation of the structure.

The scope of our investigation included the following:<sup>2</sup>

1. Examination of the site and single-family residence

<sup>1</sup> The investigation was limited to visual observations of accessible elements of the structure(s) and/or property. Unless otherwise noted, no invasive or destructive actions were taken to penetrate concealed or finished areas to observe or document any damage or conditions not readily visible.

<sup>2</sup> When appropriate, tests or measurements were made in accordance with equipment manufacturers' recommendations and/or operating directions and ASTM or other applicable testing standards.

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2. Interview with Mr. Randy Black of State Farm.
3. Interview with Mr. Peter Norris, owner/insured.
4. Review of photographs and engineered design drawings of the house provided by the insured.
5. Interview with Mr. Mike Livers, the builder of the house.
6. Interview with Mr. Brooks Gilbertson, Gilbertson Construction (425-210-3322), drainage, excavation contractor.
7. Telephone interview with Mr. Ken Severance, Maintenance Manager, for the Ponderosa Community Club (PCC).
8. Telephone consultation with Mr. Timothy Roberts, P.E., R.G., of South Sound Geotechnical Consulting (SSGC).
9. Consultation with Mr. Warren Harris, P.I., Senior Forensic Chemist with CASE.
10. Research of Chelan County Washington assessor records.
11. Research of regional soil properties.
12. Research of historical regional weather data.
13. Research of the 2003 versions of the International Residential Code (IRC) and the 2003 International Plumbing Code (IPC).
14. Review of information posted on the Ponderosa Community Club web site.  
(<http://www.ponderosacommunityclub.org/>)
15. Document and/or photograph pertinent observations.<sup>3</sup>
16. Review of the Ponderosa Community Club (PCC) web site.
17. Laboratory examination of samples of the domestic water supply line.
18. Minor soil probing was accomplished to establish and observe relative soil densities.
19. Preparation of this report to present our findings and to render a professional engineering opinion.

### **FINDINGS OF INVESTIGATION**

An on-site field examination/investigation was conducted on December 6 and 30, 2013 by Mr. Scott J. Thomas, P.E., Senior Forensic Engineer with CASE. Access to the property was

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<sup>3</sup> Photographs taken during the course of this investigation may be appended to this report or distributed under separate cover. Some photographs embedded within the report may have been cropped and/or otherwise modified to emphasize or identify a specific item or feature. All photographs associated with this assignment have been retained in the original format in the CASE files and can be made available in a print or digital format (CD) upon request.



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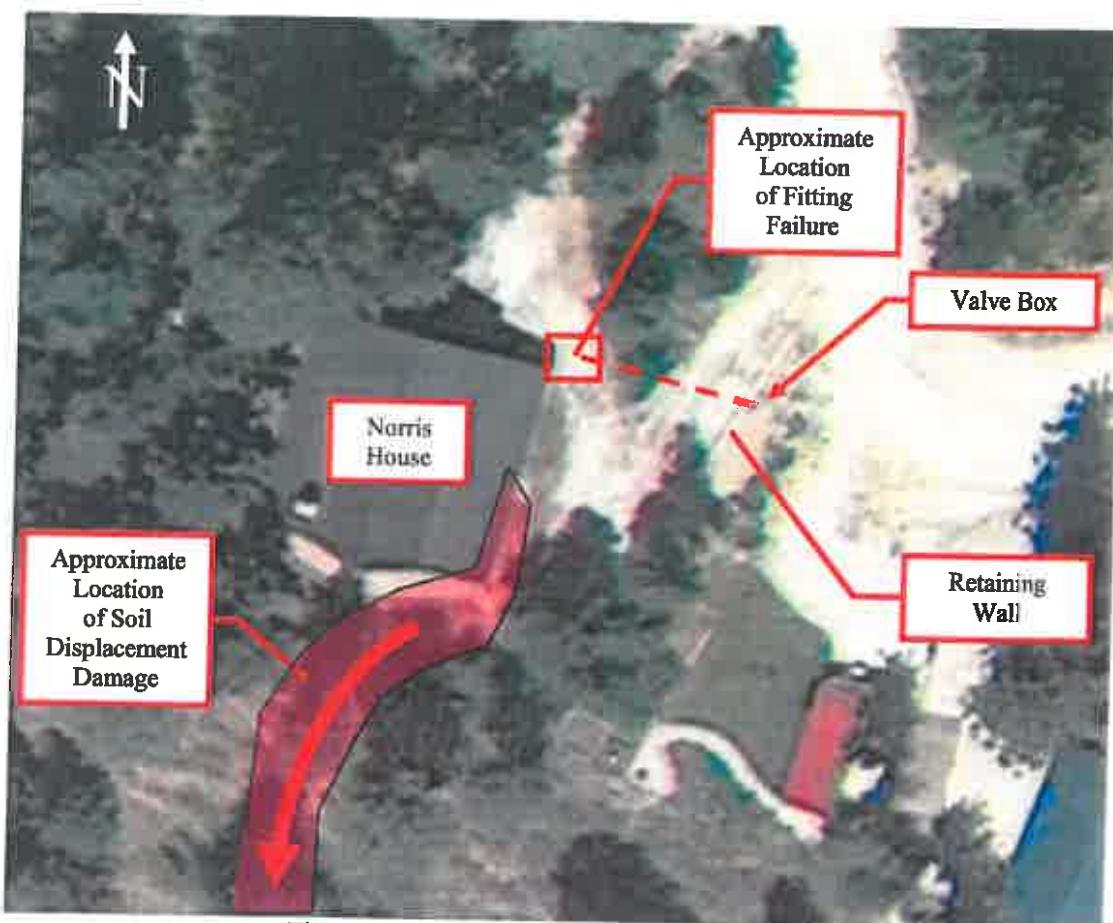
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provided by the insured. During the examination/investigation the following pertinent observations were made and recorded.<sup>4</sup>

**Note: For the purposes of this report the front of the structure will be considered to face east.**

**General**

1. Below is an aerial image of the property with elements of interest identified. The dashed red line indicates the approximate position of the 1 inch diameter PVC domestic water supply line. The red rectangle indicates the location of the buried and failed fitting in the domestic water supply line.



**Figure 1 – Aerial Image (Source: Google Earth)**

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<sup>4</sup> For the purposes of this report, unless otherwise noted, all sizes of materials are addressed as nominal, all moisture meter readings are direct unadjusted measurements, all compass directions are general and measured dimensions are approximate and limited in accuracy by field conditions.



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2. The residence is a two story, wood framed building constructed over a partial basement. The exterior wall faces of the home are finished horizontal lap wood siding. The roof is finished with metal roof panels. (Photograph 1)



**Photograph 1 – East elevation, prior to loss  
(Photograph courtesy of the insured)**

3. Research of property records revealed the residence was constructed in 2006 and is 3,000 square feet, with a 1,380 square foot deck/porch structure at the east and south sides of the house.
4. Unusually cold temperatures occurred in the Plain Washington region in November/December 2013. During this period, there was an absence of snow on the ground.
5. Research of regional soil survey data<sup>5</sup> revealed the primary soil complex at the location of the house is Nard Silt Loam. This soil type is classified by the Unified Soil Classification System (USCS) as clayey loam (CL), a Group II type soil. It is also defined by the American Association of State Highway and Transportation Officials as a “well-drained” soil type.

**CASE Comment:** The 2003 IBC requires footing drains around concrete foundations that retain earth except when the foundation is installed on well-drained ground.

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<sup>5</sup> (<http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>)



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6. The Norris house is located within the Ponderosa Estates development. The Ponderosa Estates Community Club was incorporated in 1968 to assume responsibility for The Ponderosa Estates, a recreational development just outside Plain Washington. The Ponderosa Community Club (PCC) is comprised of 582 individually owned recreational lots, separated by approximately 243 acres of commonly owned greenbelts and clubhouse grounds. There is also a commonly owned clubhouse and community swimming pool.
7. Review of the December 2013 Ponderosa Community Club Association Manager Report by Mary Cox revealed the following information:
  - a. "Responded to homeowner's calls, emails, and office visits regarding storm drainage, water leaks and frozen pipes".
  - b. "The weather in December was unusual – very little snow and a two week stretch of very cold temperatures, followed by freezing rain, then a pattern of thawing and freezing."
  - c. "Unfortunately, the very cold weather in early December resulted in frozen and broken water pipes for at least half a dozen members. In two cases, we saw water running out of uninhabited homes so we turned off the water and notified the homeowners. Ken and Geno accessed the water vaults to turn water on/off for several additional members with leaks."

**Interviews**

**Mr. Peter Norris, insured, was interviewed and provided the following information about the history of the house:**

8. The residence was constructed for the insured in 2006 by Mr. Mike Livers. The house is not the principal residence of the insured. The house is used periodically throughout the year by the insured's family; the house is not a rental property. The primary heat source for the house is an electric powered furnace. The house is not constructed with a hydronic heating system. An irrigation system is not installed on the property.
9. The property has a history of erosion and mud flow problems after a builder/developer cleared the land and modified Riata Road upslope and to the east of the house. In approximately September 2009, Gilbertson Construction was contracted to construct a concrete retaining wall upslope and to the east of the house to divert stormwater and future potential mud flows.
10. In approximately 2011/2012, KRCI, LLC, a contractor, replaced the water main pipes along Riata Road.
11. In August 2013, the insured hired a plumber to investigate low water pressure conditions within the house. The plumber disassembled a pressure reducing valve (PRV) and



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removed dirt and debris from the PRV, reassembled the PRV, and restored it to service. No further low water pressure problems were reported.

12. The house was visited by the insured during the Thanksgiving 2013 holiday. The house was vacated Sunday December 1, 2013. The water pressure during this visit was "fine". The thermostat was set at 55 °F when the house was vacated.
13. In the early morning hours of December 3, 2013, a neighbor reported hearing rushing water and some loud noises from the Norris property, but darkness prevented identification of the source of the noises. After sunrise, running water and mass soil movement were observed by neighbors, who called Mr. Ken Severance of PCCC to shut off the water to the house.
14. From data captured about water usage, there was a huge spike in consumption starting at approximately 8 a.m. on Tuesday December 3, 2013 until the water to the house was turned off at approximately 6-7 a.m. on Wednesday December 4, 2013.
15. On December 10, 2013, Mr. Mike Livers returned to the site with Mr. Ken Severance and observed that the water meter was turning when the water was turned back on, but that there was no water available at the house.
16. On December 26, 2013, the insured returned to the site with a contractor to excavate the water-line to search for the location of the pipe failure. It was reported that a failed one inch diameter slip fitting to male thread PVC adaptor fitting was discovered approximately four feet northeast of the northeast corner of the residence and approximately three feet below grade.

**CASE Comment:** CASE was not notified of the excavation in advance of these actions, however, steps were taken by the insured to preserve the scene and to document the excavation and exposure of the failed fitting. Photographs and video documentation were made available to CASE for review and contact information for those in attendance was provided

**Mr. Brooks Gilbertson, Excavation and Drainage Contractor, was interviewed and provided the following information about the history of the house:**

17. Mr. Gilbertson reported that the domestic water line failure location was identified by turning on the water for short periods of time and listening for running water.
18. Mr. Gilbertson reported that the minimum bury depth for domestic water supply laterals at the site was 36 inches, and that the water line was buried greater than 36 inches below grade.
19. Mr. Gilbertson opined that the house ought to have been constructed with a footing drain. He further opined that had a footing drain existed, the uncontrolled water released would



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have largely been channeled southward along the footing the east side of the house and discharged downslope and to the south of the house, presumably resulting in less damage than occurred.

20. Mr. Gilbertson opined that the pipe failure was not the result of freeze damage.

**Mr. Mike Livers, Builder,** was interviewed and provided the following information about the history of the house:

21. Mr. Livers reported during the initial site examination visit that a broken  $\frac{3}{4}$  inch diameter PVC pipe projecting from the near vertical soil face at the east side of the house was the water supply pipe to the house.

**CASE Comment:** This pipe was examined and sampled, but was later determined to be an abandoned pipe.

**Mr. Ken Severance, Maintenance Manager for the PCC,** was interviewed and provided the following information about the history of the house:

22. The weather was unusually cold during the week the pipe failure occurred, and there were clear skies at night and a lack of insulating snow cover on the ground.
23. Water line failures occurred at five additional houses within the PCC during the week bracketing December 3, 2013.
24. The 60,000 gallon reservoir that provides service to the Norris house dropped approximately 4-5 feet on the date of loss, corresponding to an estimated 20,000 gallons. He elaborated that this is a net loss, and does not include water that was being pumped from well fields to attempt to recharge the reservoir.
25. The approximate line pressure to the house is 100 psi.
26. Following the installation of new water main pipes by KRCI, LLC, in 2012, numerous homeowners reported low water pressure. The problem was reportedly traced to the failure to flush the pipes and the resultant accumulation of debris within the strainers of PRVs. The PCC management offered to hire a plumber to service and clean the strainers of affected PRVs, but Mr. Norris elected to hire his owner plumber to perform this task.
27. Meter readings for the Norris house were not available.

#### **Consultation with Mr. Timothy Roberts, P.E., R.G., of SSGC**

28. Mr. Roberts visited the site on approximately December 16, 2013.
29. The soils adjacent to the Norris house are competent and relatively stable. No evidence of tension cracks or a history of slope movement was observed.
30. It is unlikely that mass earth movement (landslide) caused the pipe failure.



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**Site Examination**

**December 7, 2013 Site Visit:**

31. Site conditions were clear and approximately 18°F. There was up to 12 inches of accumulated snow on the ground, which was frozen. Hand excavation and/or probing of the soils adjacent to the house was not possible due to the cold conditions.
32. A large quantity of the backfilled soils along the south 2/3 of the west side of the house and across the width of the south side of the house had been displaced downslope and to the south, toward the Wenatchee River. (Figure 1)
33. The soils beneath the footings of the elevated exterior decks at the east and south sides of the house had been displaced, resulting in the downward displacement of the decks. A portion of slab on grade concrete patio at the south side of the house was also during displaced downslope. (Photographs 2-4)



**Photograph 2 - Erosion damage at the southeast corner of the house, looking south**



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**Photograph 3 – Erosion damage at the east side of the house, looking south**



**Photograph 4 – Erosion damage at the south side of the house**



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34. The southeast corner of the foundation of the house was undermined approximately 10-12 feet from the south foundation wall.
35. No evidence of footing drains was observed within the debris of the failed deck structures.

**December 30, 2013 Site Visit**

36. An excavated pit measuring approximately 4 by 4 by 4 feet deep was observed at the northeast corner of the house. The red dashed line indicates the approximate orientation of the domestic water supply line. (Photograph 5)



**Photograph 5 – Location of pipe fitting failure at the southeast corner of the house**

37. Within the excavated pit, the 1 inch PVC water supply line was observed oriented in a generally east-west direction. The elevation of the pipe was measured to be 3'-4" below grade. The PVC pipe was located approximately 3 inches beneath an approximately 3 inch diameter plastic electrical conduit. (Photographs 6 and 7)

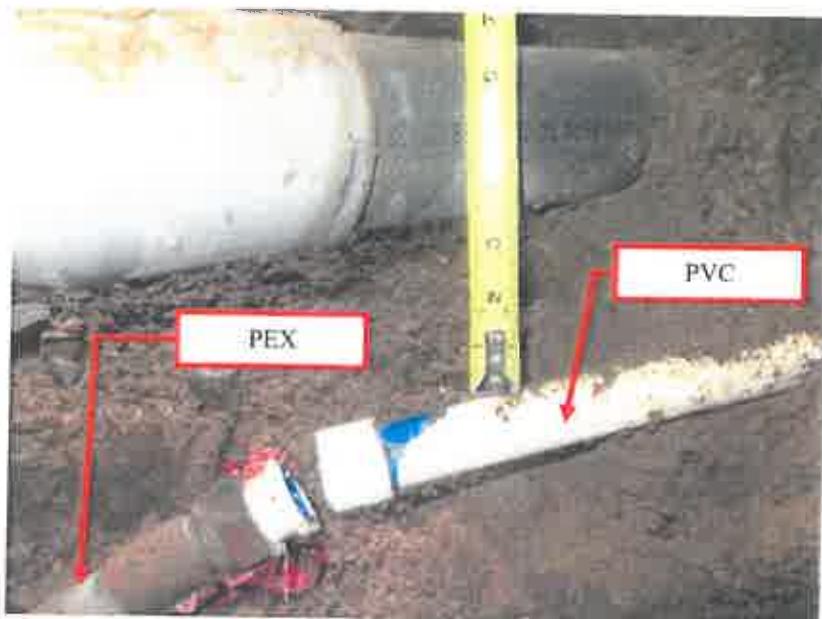


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Photograph 6 - Electrical conduit (top) and domestic water supply pipe, looking downward



Photograph 7 – Failed fitting of water supply pipe, looking north

38. A failed PVC fitting was observed at a joint between the PVC water supply pipe and the PEX tubing that continues toward the house. (Photograph 7)
39. Observation revealed the domestic water supply pipe was not installed in a straight line. An upward bend in the pipe was observed at the joint between the PVC and PEX tubing. Hand manipulation of the pipe segments indicated a tendency for the pipe ends to “spring” upward when released.

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**CASE Comment:** The installation of pipe assemblies in a non-linear fashion can result in effectively pre-loading the pipe, resulting in bending stresses within the walls of the pipe and fittings.

40. The bedding materials for the pipe appeared to be native soils. Several large, angular rocks were observed within the excavated pit.
41. The PVC pipe and PEX tubing were both marked to indicate the upward facing surfaces and were subsequently cut to remove the two component halves of the failed PVC fitting. The samples were labeled and were taken into evidence by CASE for additional laboratory examination.

**Consultation with Mr. Warren Harris, P.I., Senior Forensic Chemist with CASE.**

Mr. Harris performed a laboratory examination of the pipe and fitting samples, and reported the following:

42. The opposing ends of the fractured pipe/union included a 1-inch inside diameter white PVC plastic tube attached to a polyvinyl chloride (PVC) plastic adaptor with one inch nominal diameter male threads. The attachment of the adaptor was made with blue-colored pipe cement. The threaded PVC adaptor was fastened to a female threaded brass connector attached to a 7/8-inch inside diameter cross-linked polyethylene (PEX) tube.
43. The fracture occurred in the threaded PVC fitting. The upward orientation of the fractured pipe union was marked on the fractured pipe/union.
44. Photographs taken at the time of the sampling revealed the ends of the fractured pipes were oriented at an upward angle to each other with the opposing ends of the fracture, each at distance of less than one-foot, appearing to be held fast in the backfill.
45. The examination of the pipe revealed that topside of the fractured PVC fitting, at the fracture location, exhibits evidence of scour from a fine-grained abrasive medium. The scour was found isolated to the upper one half circumference of the fractured threaded PVC union and the underside appeared to be unaffected. The scour resulted in approximately 1/16 inch thickness of material loss. The abrasive deterioration also resulted in the removal of the features on the fracture surface at this location.

**CASE Comment:** Although the features of the uppermost portion of the fracture surface were obliterated by the episode of abrasive deterioration, the photographs and presence of



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scour suggest that the fracture initiated as a fine hairline crack at the upper most portion of the pipe and a long term spraying of water from the crack churned the sand grains in the backfill so as to create the scour pattern on the upper surface of the pipe. Furthermore, it is likely that the long term spraying and scour event resulted in the slow removal of the back-fill overburden such that the existing coil stress on the PEX tubing exceeded the remaining strength in the PVC threaded joint.

- 46. No evidence of tool marks or improper cementing of the threaded PVC union was found. The drip patterns from excess cement on pie/union join reveal the PVC pipe was in a horizontal position when the PVC union was cemented.
- 47. The exposed fracture surface that was not scoured exhibits evidence of both a rapid brittle fracture and a slow tearing ductile fracture. (Photograph 8)
- 48. The forces associated with the formation of the initial hairline fracture in the PVC threaded union were created at the time the PVC was joined with the PEX. It is also likely that the fracture was initiated at the time of installation.



**Photograph 8 – Microscope image of component parts of failed PVC fitting**

#### **DISCUSSION/ANALYSIS OF FINDINGS**

The pipe failure does not appear to be the result of mass earth movement such as a landslide. This is supported by the opinions of Mr. Timothy Roberts, P.E., R.G., of South Sound Geotechnical Consulting. The soil displacement and erosion damage to the foundation of the



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house appear to be the result of the failed PVC fitting on the water supply line. Research of code requirements in place at the time of construction indicate that use of the PVC fitting met minimum code requirements, as did the bury depth of the pipe at the failed fitting location.

While the drawings created for the construction of the house indicate the provision of footing drains as an option, review of 2003 IBC requirements revealed that the footing drain requirement is excepted when the foundation is placed on well-drained soils, as were observed to be present at the site.

PVC materials exhibit a significant material behavior change at lower temperatures in the range of approximately 30 °F. The material becomes much more susceptible to damage from impact/impulse loading such as might be caused by sudden pressure surges or water hammer caused by opening and closing water valves or operating fixtures.

## **CONCLUSIONS**

Based on an engineering analysis and the findings of our site examination/investigation, the following conclusions are presented with a reasonable degree of engineering and scientific probability:

1. The reported soils displacement damage was observed, documented, and confirmed to exist.
2. The primary cause of the reported, observed, and documented soils displacement damage was erosion of the soils caused by the sudden uncontrolled release of thousands of gallons of water from the failed domestic water supply line on the date of loss. This is evidenced by the erosion and soil displacement patterns, anecdotal evidence provided by Mr. Ken Severance, the professional opinion of Mr. Tim Roberts of SSGS, and the observed PVC fitting failure at a location absent of evidence of mass soil movement.
3. The most likely source of the stresses which initiated the reported, observed, and documented PVC fitting failure and the resultant uncontrolled water loss were bending stresses induced during installation of the water lines in 2005-2006. The presence of scour suggests that the fracture initiated as a fine hairline crack at the upper most portion of the pipe and a long term spraying of water from the crack churned the sand grains in the backfill so as to create the scour pattern on the upper surface of the pipe. Furthermore, it is likely that the long term spraying and scour event resulted in the slow removal of the back-fill overburden such the existing coil stress on the PEX tubing exceeded the remaining strength in the PVC threaded joint. This is evidence by the observed scour patterns and the professional opinions of Mr. Warren Harris.



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4. It is likely that the extraordinarily cold temperatures experienced at the house during the week of the PVC fitting failure contributed to the loss by affecting the ductility, shrinkage, and resistance to impact loading/pressure surges. This is evidenced by research of the properties of PVC in cold temperatures and by anecdotal information regarding several other pipe failure incidences within the PCC during the same approximate time period.

CASE reserves the right to supplement or amend this report should additional information become available. If you have any questions or comments regarding any element of our report, please do not hesitate to contact me at (425) 775-5550.

Respectfully Submitted:



Scott J. Thomas, P.E.  
Senior Forensic Engineer  
CASE Forensics

Reviewed by:



Will Wolfert, Director  
Property Services and Investigations  
CASE Forensics





June 19, 2015

Ms. Donna Chamberlain  
Lewis Brisbois Bisgaard & Smith LLP  
2101 Fourth Avenue, Suite 700  
Seattle, WA 98121

**NORRIS DAMAGE REPAIR COST ALLOCATION**

Insured: Peter and Renee Norris  
Loss Address: 25408 Riata Street  
Plain, Washington 98826  
DOL: December 4, 2013  
Claim Number: 47-26X8-510  
CASE File Number: 2000415

**STATEMENT/BACKGROUND INFORMATION**

In response to the December 4, 2013 request of Mr. Randy Black of State Farm Insurance Company (State Farm), CASE Forensics Corporation (CASE) conducted an examination/investigation of a single-family residence/vacation home located at 25408 Riata Street, Plain, Washington.<sup>1</sup> The residence is owned by Peter and Renee Norris, who reported the failure of a domestic water supply pipe fitting, associated uncontrolled water release, and displacement of soils from beneath the foundation of the residence. Site investigations were performed by CASE on December 6 and 30, 2013. A written report detailing the findings and conclusions of the CASE investigation was produced on January 24, 2014.

On May 22, 2015, CASE was requested by Ms. Donna Chamberlain, Counsel for State Farm, to review invoices and documentation regarding repairs made to the house to date by the insured and agents thereof. CASE was provided with a disc containing Plaintiff's Responses to Defendant's First Set of Interrogatories and Requests for Production with all supporting documents. CASE was also provided with an excerpt of the Plaintiff's homeowner's policy that provides a definition of the term *dwelling*.

<sup>1</sup> The investigation was limited to visual observations of accessible elements of the structure(s) and/or property. Unless otherwise noted, no invasive or destructive actions were taken to penetrate concealed or finished areas to observe or document any damage or conditions not readily visible.



**CASE Forensics Corporation  
Norris Damage Repair Cost Allocation Analysis  
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## PURPOSE AND SCOPE

The scope of work for this phase of the investigation was to allocate the Plaintiff's submitted claimed costs between 1) dwelling repairs and 2) non-dwelling repairs, based upon the definition of *dwelling* provided to CASE.

## FINDINGS

It is our understanding that the Norris' State Farm Homeowner's Policy includes the term dwelling. The definition of "dwelling" and associated policy language provided to CASE follows below. (Figure 1)

### COVERAGE A - DWELLING

1. **Dwelling.** We cover the dwelling used principally as a private residence on the residence premises shown in the Declarations.  
**Dwelling includes:**
  - a. structures attached to the dwelling;
  - b. materials and supplies located on or adjacent to the residence premises for use in the construction, alteration or repair of the dwelling or other structures on the residence premises;
  - c. foundation, floor slab and footings supporting the dwelling, and
  - d. wall-to-wall carpeting attached to the dwelling.
2. **Dwelling Extension.** We cover other structures on the residence premises, separated from the dwelling by clear space. Structures connected to the dwelling by only a fence, utility line, or similar connection are considered to be other structures.  
**We do not cover other structures:**
  - a. not permanently attached to or otherwise forming a part of the realty;
  - b. used in whole or in part for business purposes unless such use consists solely of use of office space for paperwork, computer work or use of a telephone, and consists solely of facilities that are:
    - (1) duties of the insured's employment by another; and
    - (2) performed solely by the insured; or
  - c. rented or held for rental to a person not a tenant of the dwelling, unless used solely as a private garage.
3. **Property Not Covered.** We do not cover:
  - a. land, including the land necessary to support any Coverage A property;
  - b. any costs required to replace, rebuild, stabilize, or otherwise restore the land;
  - c. the costs of repair techniques designed to compensate for or prevent land instability to any property, whether or not insured under Coverage A; or
  - d. lawns or artificial grass, except as provide in SECTION I - ADDITIONAL COVERAGES.

Figure 1 – State Farm Homeowner's Policy Language (Source: Lewis Brisbois Bisgaard & Smith LLP)



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In order to allocate claimed costs, it was necessary to interpret the provided policy language as it applies to the damage at the Norris property.

It is our interpretation of the policy language within Section 1, that the costs for the following repair tasks **would** be considered dwelling-related repair costs:

1. Costs associated with the repairs of the attached elevated west deck and footings.
2. Costs associated with the repairs of the attached south porch and footings.
3. Costs associated with the bracing and repair of the roof structure.

Our interpretation of the exclusions listed within Section 3 is that the costs for the following repair tasks **would not** be considered dwelling-related repair costs:

1. The restoration of the displaced soils on which the foundation of the structure had been bearing.
2. The costs to stabilize and rebuild bearing soils and soils downslope of the dwelling.
3. The costs of repair techniques (e.g. pin pile installation, shotcrete wall installation, structural foam installation) designed to compensate for land instability.

CASE reviewed the materials generated as a result of State Farm's request for production. The documents provided are detailed on the CD Contents document provided for State Farm Claim Number: 46-26X8-510. The submitted invoices were generally designated by CASE as dwelling or non-dwelling repairs based upon our interpretation of the provided definition of *dwelling* and language specific to the Norris' homeowner's policy. In instances where claimed costs were attributable to both dwelling and non-dwelling repairs, an attempt was made to estimate the allocation of dwelling vs. non-dwelling repairs. In instances where claimed costs could not be allocated with reasonable precision due to the absence of specific information about the costs, a note was made that additional information would be required to determine whether the claimed costs are dwelling or non-dwelling related repairs. Allocations are presented in a Table I, enclosed to this report.

#### **DISCUSSION/ANALYSIS OF FINDINGS**

During the review of documents in the cost allocation process, CASE encountered several invoices which contained insufficient detail to allow reasonable determination of whether the costs were attributable to dwelling or non-dwelling repairs; the invoices were footnoted accordingly. In order that these costs be appropriately allocated, it would be useful to have additional information provided regarding these flagged costs. Additionally, it would be helpful to have additional information regarding the progress of repairs to the structure and attached



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substructures, specifically, the south elevated wood deck and the east wood porch structures. It would also be helpful to know which costs are associated with the repairs of these structures including the isolated concrete footings that supported these substructures.

**CONCLUSIONS**

Based on an engineering analysis and the findings of our review of submitted documentation regarding claim related costs submitted to date and the *dwelling* definition provided, the following conclusions are presented with a reasonable degree of engineering probability:

1. The total of claimed and documented costs to date related to dwelling related repairs is \$2,465.04.
2. The total of claimed and documented costs to date related to non-dwelling related repairs is \$215,040.55.
3. The total of claimed costs to date related to repairs which may or may not be related to the dwelling is \$43,607.31. Additional information will be required to determine whether these claimed and documented costs are dwelling or non-dwelling related repairs.
4. It is our expectation that the above listed totals will change as additional information is provided regarding the details of the claimed and documented costs.

CASE reserves the right to supplement or amend this report should additional information become available. If you have any questions or comments regarding any element of our report, please do not hesitate to contact me at (425) 775-5550.

Respectfully Submitted:



Scott J. Thomas, P.E.  
Principal, Civil Engineer  
CASE Forensics

Reviewed by:



Will Wolfert, Director  
Property Services and Investigations  
CASE Forensics

Enclosure: Appended Table I

TABLE 1 - ALLOCATION OF COSTS

Repair Costs - Vendor Invoice Summary									
Vendor Name	Invoice Date (month/year)	Invoice No. &	Description of Work	Timeline Actual	Personnel		Allocated Costs	Dredging	Other
					New Dredging	Under-contract dredging			
CG Engineering	January 7, 2014	22514	Site Visit, Pre-fit evaluation	2013/1/20	100%	0%	\$ 2,857.20	5	-
	February 1, 2014	22311	Private dredging, Site Visit to review temporary dredging	2013/2/10	90%	10%	\$ 2916.00	1	\$ 101 for the main trench, no additional cost.
	June 12, 2014	22735	Phase One/Initial Project Review, Site visit and Dredging Services	2013/6/10	83%	13%	\$ 321.00	5	\$ 101 for the main trench, no additional cost.
	July 9, 2014	22859	No value provided. (Rev. Invoice #21519 [lost provided])	2013/7/10	0%	100%	\$ 2,570.00	5	The portion of costs associated with repair of the elevated main dock, no value provided was estimated.
	September 11, 2014	23071	Site Visit, initial walk down	2013/9/20	100%	0%	\$ 4,450.00	1	Additional information required for review.
Advanced Foundations	December 26, 2013	13134	Initial 1/2 phase, initial site visit	2013/12/27	100%	0%	\$ 1,645.20	9	-
Superior LLC	January 5, 2014	13118	Phase 1: Initial site visit, inspection, "check" costs pre-project services, Initial bid, bid rates	2013/1/05	0%	0%	\$ 4,188.37	5	Cost include type material and prefabrication
	January 15, 2014	13142	Phase 1: Bid for piles, inspection, initial pipe sections, prep abutments	2013/1/15	0%	0%	\$ 18,813.05	5	Cost include materials, prep material, and pile installation
	January 22, 2014	13144	Initial 1/2 phase, initial site visit	2013/1/27	0%	0%	\$ 21,932.37	5	-
Nelco Geotech	January 9, 2014	30014	Initial contract and estimates, bid costs, insurance	2013/1/27	80%	0%	\$ 11,891.23	5	The portion of costs associated with repair of the elevated main dock and main trench, bidding was estimated.
Assessments	January 9, 2014	no number	Communication and Monitoring services for project	2013/1/29	100%	0%	\$ 29,001.50	5	Cost include self-inspections and input continues, designed to compensate for fluid instability
	January 20, 2014	no number	Communication and Monitoring services for project	2013/1/30	100%	0%	\$ 7,866.59	5	-
	April 26, 2014	no number	Communication and Monitoring services for main site	2013/4/30	100%	0%	\$ 3,683.92	4	Cost include general geotechnical services including preliminary evaluation and design of temporary support for the main site
	May 12, 2014	no number	Communication and Monitoring services for main site	2013/5/1	100%	0%	\$ 3,125.79	4	-
	August 28, 2014	no number	Communication and Monitoring services for main site	2013/8/28	100%	0%	\$ 1,0716.88	5	Cost include general geotechnical services including monitoring (B) services
	November 26, 2014	no number	Communication and Monitoring services for main site	2013/9/30	100%	0%	\$ 4,080.91	5	Cost include general geotechnical services including monitoring (B) services
Appli-Water Systems	January 2, 2013	14643	Oilfield bid, Survey services	2013/1/05	0%	0%	\$ 1,788.50	5	Cost include general geotechnical services
	January 31, 2013	14671	Oilfield bid, Survey services	2013/1/31	0%	0%	\$ 1,788.50	5	-
	February 1, 2014	14571	Oilfield bid, Survey services	2013/2/01	0%	0%	\$ 1,788.50	5	Cost include general geotechnical services
	February 13, 2014	14575	Oilfield bid, Survey services	2013/2/13	0%	0%	\$ 1,788.50	5	-
NGM Contractors	December 26, 2013	no number	Dredged site for 1st item (Rev WA) were stored for M. Laren or in truck Nov. 26, 2013 through Dec. 23, 2013	2013/12/26	100%	0%	\$ 1,891.76	5	The portion of costs associated with repair of the elevated main dock and main trench
	January 2, 2014	14523	Campsite, bedding and labor	2013/1/01	0%	100%	\$ 4,025.00	5	-
	February 14, 2014	14570	Campsite, bedding and labor	2013/2/14	0%	100%	\$ 4,025.00	5	Cost include labor for remediation and labor for cleanup.
	April 8, 2014	14531	Labor to move equipment off of barge, remove pump pump	2013/4/08	0%	100%	\$ 2,488.87	5	Cost include labor for remediation and labor for cleanup.
	October 4, 2014	14559	Workboat Stand and General cleanup services	2013/10/04	0%	100%	\$ 1,137.00	5	Cost include labor for remediation and labor for cleanup.
	November 11, 2014	14587	Construction Inspection, E&I, Test Services	2013/11/11	0%	100%	\$ 5,453.12	5	Cost include labor for remediation and labor for cleanup.
	December 12, 2014	14572	Labor, vehicles, materials	2013/12/12	0%	100%	\$ 4,520.50	5	-
Chem Creek Pipe	January 13, 2014	14570	Permit Submittal II and III	2013/1/13	0%	100%	\$ 16,621.12	5	Cost include \$13,000.00 for remediation and labor for cleanup and \$2,511.00 for Permits II and III. No value provided for cleanup.
	May 1, 2014	4917	Permit Submittal II & III, Client installed check	2013/5/01	0%	100%	\$ 1,028.38	5	The portion of costs associated with repair of the elevated main dock and main trench was estimated.
Air-Tech Concrete	September 18, 2014	4194	Preliminary foundation curve for foundation	2013/9/18	0%	100%	\$ 1,088.47	5	The portion of costs associated with repair of the elevated main dock and main trench was estimated.
Construction Specialists	October 2, 2014	4192	Inspection level, materials, labor, administration, charge	2013/10/02	0%	100%	\$ 1,181.89	5	Inspection done to provide additional information for foundation.
Frontline Health Inc.	November 22, 2014	1589	Discretion, labor, eating, travel and other on location	2013/11/22	0%	100%	\$ 553.08	5	The portion of costs associated with repair of the elevated main dock and main trench was provided to Frontline Health Inc.
	<b>Invoice Expenses TOTAL:</b>						\$115,608.85	\$43,697.51	\$2,465.64

\*Note

1. No apparent use of personnel for the elevated main dock and main trench which can be related to dredging activities. CGM will request additional detail about the scope of work associated with them as needed to provide for further review.

2. Work not yet completed as outlined in this document do not appear to be related to dredging activities. Specifically, we submitted a bid for the Beamerworks Policy's inclusion of dredging provided by Chem Creek.